What is it about Smart Impact Bonds? (Part 1) + (Part 2)

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Great excitement has been created around the possibility that Government could use impact bonds to overcome the challenges of procuring innovation, and to transfer at least part of the risks of taking up innovation to the private sector.

The rationale is as follows. The private sector may (or *does*, depending on your political views) know better than Government how to best tackle certain social problems, and is typically more risk-taking. What is more, innovation costs are often front-loaded, and the private sector typically faces less binding liquidity constraints.

Social Impact Bonds (SIBs; also known in developing countries as Development Impact Bonds, or DIBs) are an innovative financing mechanism that allows Government to delegate specific policy challenges to the private sector through a derivative security payment scheme.

In a typical SIB, an implementer hired by Government through a competitive bidding process fundraises with donors and investors to hire vendors directly. Other than the implementer costs (typically only a small fraction of providing goods and services to solve those challenges), Government only pays for implementation if vendors do a better job than it would by providing the service itself—sharing part of the generated Government savings. If outcomes are reached, the bond pays out and investors get paid back (earning a positive return on investment); otherwise, they do not.

There are variations of this model. In some cases, external donors—rather than Government—are fully responsible for paying out investors

in case targets are reached. Also, in some cases, targets do not involve counterfactual validation (through rigorous impact evaluation), but rather just an agreement of what goals should be achieved, in which case the bond payout scheme may determine a lump sum payment instead of assigning a fraction of Government savings.

In principle, SIBs sound great. That seems particularly the case when Government procurement involves complex guidelines that impose extra hurdles for hiring (anything, innovation included)—as it tends to be the case in middle-income countries. A leading example is Brazil, which requires terms of reference to always fully specify the object of procurement. It is easy to see how this precludes Government from taking up innovation: it is impossible to fully specify the object to the satisfaction of Court of Accounts' auditors when the good or service may still be in test phase and not yet available on the market.

You can read more about SIBs here, but I particularly like this quote:

> *SIBs have been called "incomprehensible and irrelevant" in some quarters and as a "game-changer" in others—an indication that the jury is still out. However, one thing that does seem to create agreement is their complexity.*

Complexity means they are typically very small-scale. And being small-scale, they do not really solve any relevant problem.

I am a board member of the State of São Paulo's first SIB, targeted at improving high-schoolers' learning and grade promotion rates. São Paulo has 3.6 MM students (1 MM of those in high-school). The SIB was meant to benefit 12,000 students over the course of five years. This is too little.

Of course, SIB proponents are quick to mention that there is a hypothesis my argument overlooks: that SIBs would allow Government to test and validate solutions, which could be later on scaled through regular procurement.

My research suggests that this is a false hope. Procurement staff face asymmetric incentives: very large punishment in the case of procurement mistakes, but only small rewards from successful procurement. The reason is that most funds towards public service provision come from federal government redistribution. When a new

hospital is built, local government has a hard time claiming the credit. But when there is evidence of procurement manipulation, local procurement staff can lose their tenured jobs, pay large fines out of their pockets, and face jail time. And with such complex procurement guidelines, bureaucrats often have to rely on vendors to fully specify the object in the terms of reference. As a result, local bureaucrats tend to be extremely risk averse.

A 4–5 year successful experience at a small scale does not really solve the fundamental issue of procurement risk. All in all, citizens are held up to "bureaucratic minimal squawk behavior".

Is there a way through which SIBs could be larger scale, providing a scalable way for the private sector to draw on innovation to solve policy challenges ?

A new way forward?

A very interesting recent piece by Shaun Conway explains how blockchain technology could be a promising way forward for impact bonds—giving birth to a new form of innovative financing: *Smart* Impact Bonds.

The piece suggests that blockchain could solve two critical issues of impact bonds:

1. The problem of incentives of contracting parties to misrepresent their deliverables, which are tied to the payments they get through the bond payout scheme.

2. The problem of lack of diversification, since SIBs scale are limited by donors' and investors' aversion to the risk that a combination of factors may prevent providers from reaching delivery goals.

Shaun explains (emphasis added):

> *Impact Claims are submitted (…) through a purpose-built blockchain that validates each claim and establishes crypto-economic Proof of Impact. By transforming raw data into* ***verified impact data****, with proof of impact,*

> *this becomes a valuable digital asset. Each impact asset is now represented as a cryptographic token* ***that can be traded*** *for capital or other assets and used to trigger impact bond payments.*

> *(…) This provides a highly secure,* ***trustless*** *and* ***scalable*** *control system for executing Impact Bonds. We refer to these as* Smart Impact Bonds.

How excited should you be about Smart Impact Bonds? The answer depends on your expectations about the ability of blockchain to solve the critical issues of trust and diversification.

Can blockchain make SIBs scalable?

First, can SIBs solve the issue of incentives for contracting parties, by replacing a contracting scheme that requires trust (or that substitutes for it with high supervision, monitoring and evaluation costs) with "a highly secure, trustless" control system?

The short anwer is: no. Kai Stinchcombe's piece puts it better than I could:

> *It's true that tampering with data stored on a blockchain is hard, but it's false that blockchain is a good way to create data that has integrity (…) It's not* trustless*, you're trusting in the software (and your ability to defend yourself in a software-driven world), instead of trusting other people. (…) Blockchain systems do not magically make the data in them accurate or the people entering the data trustworthy, they merely enable you to audit whether it has been tampered with.*

When describing a voter registration system written on blockchain, Kai points out that one cannot escape the need to build trust among the parties, and that this relies on "old fashioned" mechanisms that have nothing to do with blockchain; what is worse, blockchain may actually obscure some of them, making some contractual relations less, rather than more transparent.

For the sake of clarity, I reproduce his argument below, replacing the terms "votes", "voter" and "voter registration" by its SIBs' counterparts:

Before blockchain can even get involved, you need to trust that Impact Claims are distributed accurately, that goods are distributed and services rendered only to the target audience and with quality compatible with expectations (even harder to enforce whenever payment depends on counterfactual analysis through impact evaluations), that the deliverables displayed by the system are the same as the ones actually distributed or rendered, and that no extra Impact Claims are given to the providers colluding with the monitoring parties.

Kai then goes on to say:

> *Blockchain makes none of these problems easier and many of them harder —but more importantly, solving them in a blockchain context requires a set of awkward workarounds that undermine the core premise. So we know the entries are valid, let's allow only trusted nonprofits to make entries—and you're back at the good old "classic" ledger. In fact, if you look at* any *blockchain solution, inevitably you'll find an awkward workaround to re-create trusted parties in a trustless world.*

Now, even if blockchain does not mitigate the incentives/trust issue preventing SIBs from reaching scale, it still could help by allowing investors to better diversify their risk.

The fact that impact assets can be traded indeed creates some ground for diversification, such that SIBs' scale could grow without scaring its funders away.

The key questions are whether trading impact assets can make SIBs' scale large enough to solve a

relevant problem and, most importantly, whether blockchain is required for that.

Let me answer the last question first. Creating a market for impact assets requires a common denominator across different SIBs. While Impact Claims provide one such denominator, there are many other possibilities. Take, for instance, implementer's profits. If different implementers cater to multiple SIBs, then trading implementers' shares on the stock market would already provide the basis for diversification required for the argument, even on the complete absence of blockchain.

In what comes to the relationship between diversification and SIB's scale, it is important to recognize that the idea that pooling lowers risk is due to the **Law of Large Numbers.** This is true to the extent that there are **many subjects**, and that their **risk is idiosyncratic**, i.e.displays low correlation.

"Many subjects" would require many SIBs. But less than a year ago, we were still celebrating results from the world's very first SIB. So unless the demand for SIBs changes dramatically in the foreseeable future, it is hard to think that one diversify risk away by pooling different instances of them.

"Idiosyncractic risk" also places a hard constraint in the case of SIBs. As an example, if all 5,700 Brazilian municipalities took up SIBs, could investors diversify their risks by holding claims on multiple SIBs?

Well… when working with Government, one of the major sources of risk is not idyosincratic—that vendors may fail to deliver on some cases—, but rather aggregate: office holders change every 2 years (between the federal and local levels), and this risk affects all municipalities to a similar extent. In sum, political risk is key when it comes to SIBs, and this risk is much harder to diversify away.

TL;DR

Social Impact Bonds tend to be very small-scale. And being small-scale, they do not really solve any relevant problem. Two critical issues linked to SIBs' limits to scale are (1) trust issues linked to verifying deliverables that trigger payments to investors, and (2) lack of diversification of risks that may prevent providers from reaching delivery goals. Blockchain is **neither necessary or sufficient** to improve on those critical issues.